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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/505,145	04/08/2005	Steven Peter Colliver	056159-5241	9553

9629 7590 04/11/2008

MORGAN LEWIS & BOCKIUS LLP
1111 PENNSYLVANIA AVENUE NW
WASHINGTON, DC 20004

EXAMINER	
KALLIS, RUSSELL	
ART UNIT	PAPER NUMBER
1638	
MAIL DATE	DELIVERY MODE
04/11/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/505,145	COLLIVER ET AL.	
	Examiner	Art Unit	
	RUSSELL KALLIS	1638	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 January 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,22-25,28-31 and 34-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,22-25,28-31 and 34-39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 January 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claims 1-2, 22-25, 28-31 and 34-39 are pending and examined.

Claim Rejections - 35 USC § 102

Claims 1-2, 22-25, 28-31 and 34-39 remain rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 7,038,113 filed March 8, 1999. This rejection is maintained for the reasons of record set forth in the Official action mailed 10/18/2007. Applicant's arguments filed 1/18/2007 have been considered but are not deemed persuasive.

Applicant asserts that the claims now recite limitations not found in the prior art reference and recites "a plant active in flavanol and anthocyanin biosynthesis", "a fragment of SEQ ID NO: 2 having chalcone reductase activity", "a fragment of SEQ ID NO: 4 having isoflavone synthase activity", and "a fragment of SEQ ID NO: 6 catalyzing 4, 2'4'-trihydroxychalcone (i.e. 2',4,4'-trihydroxychalcone) to 7,4'-dihydroxyflavanone (i.e. liquiritigenin)" (response page 6).

This is not persuasive because the claims are broadly drawn to unspecified fragments of unspecified length and identity of heterologous isoflavone synthase, chalcone reductase and chalcone isomerase that retain activity and are not distinguished from those already known in the prior art. Examples of the work of R.A. Dixon an inventor of the prior art '113 patent prior to the instant filing are provided as evidence in support of the argument supra.

```
RESULT 1
US-09-936-190-1
; Sequence 1, Application US/09936190
; Patent No. 7038113
; GENERAL INFORMATION:
;  APPLICANT: STEELE, Christopher L.
;  APPLICANT:  DIXON, Richard A.
;  TITLE OF INVENTION: GENETIC MANIPULATION OF ISOFLAVONOIDS
;  FILE REFERENCE: 11137/05006
;  CURRENT APPLICATION NUMBER: US/09/936,190
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;  CURRENT FILING DATE:  2001-09-13
;  PRIOR APPLICATION NUMBER: 60/123,267
;  PRIOR FILING DATE: 1999-03-08
;  NUMBER OF SEQ ID NOS: 5
;  SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 1
;   LENGTH: 1717
;   TYPE: DNA
;   ORGANISM: Glycine max
;   FEATURE:
;   NAME/KEY: CDS
;   LOCATION: (36)..(1598)
US-09-936-190-1

  Query Match             98.7%;  Score 1546.8;  DB 5;  Length 1717;
  Best Local Similarity   99.2%;  Pred. No. 0;
  Matches 1554;  Conservative    0;  Mismatches   12;  Indels    0;  Gaps
0;

Qy          1 ATGGTGCTTGAACTTGCACTTGGTTTATTGGTTTTGGCTCTGTTTCTGCACTTGCGTCCC 60
              ||| ||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         36 ATGTTGCTTGAACTTGCACTTGGTTTATTGGTTTTGGCTCTGTTTCTGCACTTGCGTCCC 95

Qy         61 ACACCCACTGCAAAATCAAAAGCACTTCGCCATCTCCCAAACCCACCAAGCCCAAAGCCT
120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         96 ACACCCACTGCAAAATCAAAAGCACTTCGCCATCTCCCAAACCCACCAAGCCCAAAGCCT
155

Qy        121 CGTCTTCCCTTCATAGGACACCTTCATCTCTTAAAAGACAAACTTCTCCACTACGCACTC
180
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        156 CGTCTTCCCTTCATAGGACACCTTCATCTCTTAAAAGACAAACTTCTCCACTACGCACTC
215

Qy        181 ATCGACCTCTCCAAAAAACATGGTCCCTTATTCTCTCTCTACTTTGGCTCCATGCCAACC
240
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Db        216 ATCGACCTCTCCAAAAAACATGGTCCCTTATTCTCTCTCTACTTTGGCTCCATGCCAACC
275

Qy        241 GTTGTTGCCTCCACACCAGAATTGTTCAAGCTCTTCCTCCAAACGCACGAGGCAACTTCC
300
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Db        276 GTTGTTGCCTCCACACCAGAATTGTTCAAGCTCTTCCTCCAAACGCACGAGGCAACTTCC
335

Qy        301 TTCAACACAAGGTTCCAAACCTCAGCCATAAGACGCCTCACCTATGATAGCTCAGTGGCA
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395
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Qy        361 ATGGTTCCCTTCGGGCCCTACTGGAAGTTCGTGAGGAAGCTCATCATGAACGACCTTCTC
420
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Db        396 ATGGTTCCCTTCGGACCTTACTGGAAGTTCGTGAGGAAGCTCATCATGAACGACCTTCTC
455

Qy        421 AACGCCACCACTGTAAACAAGTTGAGGCCTTTGAGGACCCAACAGACGCGTAAGTTCCTT
480
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Db        456 AACGCCACCACTGTAAACAAGTTGAGGCCTTTGAGGACCCAACAGATCCGCAAGTTCCTT
515

Qy        481 AGGGTTATGGCCCAAGGCGCAGAGGCACAGAAGCCCCTTGACTTGACCGAGGAGCTTCTG
540
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Db        516 AGGGTTATGGCCCAAGGCGCAGAGGCACAGAAGCCCCTTGACTTGACCGAGGAGCTTCTG
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Qy        541 AAATGGACCAACAGCACCATCTCCATGATGATGCTCGGCGAGGCTGAGGAGATCAGAGAC
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Qy        601 ATCGCTCGCGAGGTTCTTAAGATCTTTGGCGAATACAGCCTCACTGACTTCATCTGGCCA
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695

Qy        661 TTGAAGCATCTCAAGGTTGGAAAGTATGAGAAGAGGATCGACGACATCTTGAACAAGTTC
720
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755

Qy        721 GACCCTGTCGTTGAAAGGGTCATCAAGAAGCGCCGTGAGATCGTGAGGAGGAGAAAGAAC
780
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Db        756 GACCCTGTCGTTGAAAGGGTCATCAAGAAGCGCCGTGAGATCGTGAGGAGGAGAAAGAAC
815

Qy        781 GGAGAGGTTGTTGAGGGTGAGGTCAGCGGGGTTTTCCTTGACACTTTGCTCGAGTTCGCT
840
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Qy        841 GAGGATGAGACTATGGAGATCAAAATCACCAAGGACCACATCAAGGGTCTTGTTGTAGAC
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Db        876 GAGGATGAGACCATGGAGATCAAAATCACCAAGGACCACATCAAGGGTCTTGTTGTCGAC
935
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Qy        901 TTTTTCTCGGCAGGAACAGACTCAACAGCGGTGGCAACAGAGTGGGCATTGGCAGAACTC
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Qy        961 ATCAACAATCCTAAGGTGTTGGAAAAGGCTCGTGAGGAGGTCTACAGTGTTGTGGGAAAG
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Qy       1021 GACAGACTTGTGGACGAAGTTGACACTCAAAACCTTCCTTACATTAGAGCAATCGTGAAG
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Db       1056 GACAGACTTGTGGACGAAGTTGACACTCAAAACCTTCCTTACATTAGAGCAATCGTGAAG
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Qy       1081 GAGACATTCCGCATGCACCCGCCACTCCCAGTGGTCAAAAGAAAGTGCACAGAAGAGTGT
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Db       1116 GAGACATTCCGCATGCACCCGCCACTCCCAGTGGTCAAAAGAAAGTGCACAGAAGAGTGT
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Qy       1141 GAGATTAATGGATATGTGATCCCAGAGGGAGCATTGATTCTCTTCAATGTATGGCAAGTA
1200
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Qy       1201 GGAAGAGACCCCAAATACTGGGACAGACCATCGGAGTTCCGTCCTGAGAGGTTCCTAGAG
1260
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Qy       1261 ACAGGGGCTGAAGGGGAAGCAGGGCCTCTTGATCTTAGGGGACAACATTTTCAACTTCTC
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Qy       1321 CCATTTGGGTCTGGGAGGAGAATGTGCCCTGGAGTCAATCTGGCTACTTCGGGAATGGCA
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Qy       1381 ACACTTCTTGCATCTCTTATTCAGTGCTTCGACTTGCAAGTGCTGGGTCCACAAGGACAG
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Qy       1441 ATATTGAAGGGTGGTGACGCCAAAGTTAGCATGGAAGAGAGAGCCGGCCTCACTGTTCCA
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Qy       1501 AGGGCACATAGTCTTGTCTGTGTTCCACTTGCAAGGATCGGCGTTGCATCTAAACTCCTT
1560
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1536 AGGGCACATAGTCTTGTCTGTGTTCCACTTGCAAGGATCGGCGTTGCATCTAAACTCCTT
1595

Qy       1561 TCTTAA 1566
             ||||||
Db       1596 TCTTAA 1601
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RESULT 2
MSU13925
LOCUS       MSU13925                1122 bp    mRNA    linear   PLN 30-JAN-
1997
DEFINITION  Medicago sativa Apollo clone CHR7 chalcone reductase (CHR) mRNA,
            complete cds.
ACCESSION   U13925
VERSION     U13925.1  GI:537297
KEYWORDS    .
SOURCE      Medicago sativa
  ORGANISM  Medicago sativa
            Eukaryota; Viridiplantae; Streptophyta; Embryophyta;
Tracheophyta;
            Spermatophyta; Magnoliophyta; eudicotyledons; core
eudicotyledons;
            rosids; eurosids I; Fabales; Fabaceae; Papilionoideae;
Trifolieae;
            Medicago.
REFERENCE   1  (bases 1 to 1122)
  AUTHORS   Ballance,G.M. and Dixon,R.A.
  TITLE     Medicago sativa cDNAs encoding chalcone reductase
  JOURNAL   Plant Physiol. 197, 1027-1028 (1995)
REFERENCE   2  (bases 1 to 1122)
  AUTHORS   Ballance,G.M.
  TITLE     Direct Submission
  JOURNAL   Submitted (23-AUG-1994) G. Murray Ballance, Department of Plant
            Science, University of Manitoba, Winnipeg, Manitoba R3T 2N2,
Canada
FEATURES             Location/Qualifiers
     source          1. .1122
                     /organism="Medicago sativa"
                     /mol_type="mRNA"
                     /cultivar="Apollo"
                     /sub_species="sativa"
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                     /db_xref="taxon:3879"
                     /clone="CHR7"
                     /cell_type="suspension cells"
                     /clone_lib="lambda ZapII library, Gowri et al., Plant
                     Physiol. 97:7 (1991)"
     gene            1. .1122
                     /gene="CHR"
     CDS             48. .986
                     /gene="CHR"
                     /function="coacts with chalcone synthase to produce
                     6'-deoxychalcone; In the chalcone synthase-generated
                     polyketide intermediate, the oxygen function which would
                     produce the 6'-hydroxyl of the naringenin chalcone, is
                     reduced by CHR and eliminated as water prior to ring
                     cyclization to form 6'-deoxychalcone."
                     /codon_start=1
                     /product="chalcone reductase"
                     /protein_id="AAB41556.1"
                     /db_xref="GI:537298"

/translation="MGSVEIPTKVLTNTSSQLKMPVVGMGSAPDFTCKKDTKDAIIEA

IKQGYRHFDTAAAYGSEQALGEALKEAIELGLVTREELFVTSKLWVTENHPHLVIPAL

QKSLKTLQLDYLDLYLIHWPLSSQPGKFSFPIDVADLLPFDVKGVWESMEESLKLGLT

KAIGVSNFSVKKLENLLSVATVLPAVNQVEMNLAWQQKKLREFCNANGIVLTAFSPLR

KGASRGPNEVMENDMLKEIADAHGKSVAQISLRWLYEQGVTFVPKSYDKERMNQNLCI
                     FDWSLTKEDHEKIDQIKQNRLIPGPTKPGLNDLYDD"
     polyA_signal    1094. .1099
                     /gene="CHR"
     polyA_site      1122
                     /gene="CHR"
                     /experiment="experimental evidence, no additional
details
                     recorded"
                     /note="20 A nucleotides"
ORIGIN

  Query Match             83.9%;  Score 793.6;  DB 4;  Length 1122;
  Best Local Similarity   90.0%;  Pred. No. 3.2e-224;
  Matches  850;  Conservative    0;  Mismatches   94;  Indels    0;  Gaps
0;

Qy          1 ATGGGTAGTGTTGAAATCCCAACAAAGGTGCTTACCAACACATCTGCTCAAATTAAGATG 60
              |||||||||||||||||||||||||||| ||||||||||||||  |||| | ||||||
Db         48 ATGGGTAGTGTTGAAATCCCAACAAAGGTTCTTACCAACACATCTAGTCAATTGAAGATG
107

Qy         61 CCTGTTGTTGGAATGGGATCAGCACCTGACTTCACATGCAAGAAAGACACTAAAGAAGCA
120
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Db        108 CCTGTGGTTGGAATGGGATCAGCCCCTGACTTCACATGTAAGAAAGACACAAAAGATGCA
167

Qy        121 ATCATCGAAGCCATCAAACAAGGTTACAGACACTTTGATACTGCTGCTGCTTATGGATCC
180
              ||||| |||||||||||||||||| ||||||||||||||||||||| ||||| ||
Db        168 ATCATTGAAGCCATCAAACAAGGTTATAGACACTTTGATACTGCTGCTGCATATGGCTCA
227

Qy        181 GAACAAGCTCTTGGTGAGGCTTTGAATGAGGCTATTCAACTTGGTCTTGTCACTAGAGAA
240
              ||||||||||||||| |||||||||| ||||| ||| ||||||||||||||||||||||
Db        228 GAACAAGCTCTTGGAGAGGCTTTGAAAGAGGCAATTGAACTTGGTCTTGTCACTAGAGAA
287

Qy        241 CAGCTTTTTGTTACTTCTAAACTTTGGGTTACTGAAAATCATCCTCACCTTGTTCTTCCT
300
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Db        288 GAGCTTTTTGTTACTTCTAAACTTTGGGTCACTGAAAATCATCCTCATCTTGTTATTCCT
347

Qy        301 GCTCTACAAAAATCTCTCAAGACTCTTCAGTTGGATTACTTGGATTTGTATTTGATTCAT
360
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Db        348 GCTCTTCAAAAATCTCTCAAGACTCTTCAATTGGACTATTTGGACTTGTATTTGATTCAT
407

Qy        361 TGGCCACTTAGTTCTCAGCCCGGAAAGTTTTCATTTCCAATTGATGTGGCTGATCTATTG
420
              |||||||||||| ||||| || |||||||||||||||||||||||||| ||||| |||
Db        408 TGGCCACTTAGCTCTCAACCTGGAAAGTTTTCATTTCCAATTGATGTGGCAGATCTCTTG
467

Qy        421 CCATTTGATGTAAAAGGTGTGTGGGAATCCATGGAAGAGGCTTTGAGACTTGGACTCACG
480
              |||||||||||| |||||||| |||||||||||||| ||    |||| ||||||||||||
Db        468 CCATTTGATGTGAAAGGTGTTTGGGAATCCATGGAGGAAAGCTTGAAACTTGGACTCACT
527

Qy        481 AAAGCTATTGGTGTCAGTAACTTCTCTGTCAAGAAACTTCAAAAGCTACTATCTGTTGCC
540
              |||||||||||| || ||||||||||||||||||||||| |||| || || |||||||||
Db        528 AAAGCTATTGGAGTTAGTAACTTCTCTGTCAAGAAACTTGAAAATCTTCTCTCTGTTGCC
587

Qy        541 ACTGTTCTTCCTGCTGTTAATCAAGTAGAGATGAACCTTGCATGGCAACAAAAGAAGCTA
600
              |||||||||||| || || |||||||| || ||||||||||||||||||||||||||||||
Db        588 ACTGTTCTTCCAGCAGTCAATCAAGTGGAAATGAACCTTGCATGGCAACAAAAGAAGCTT
647

Qy        601 AGAGAATTTTGCAATGAAAATGGAATAGTGTTGACTGCATTTTCACCGTTGAGGAAAGGC
660
              ||||| |||||||| | |||||||||||||| |||||||||||||| ||||||||||||
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Db        648 AGAGAGTTTTGCAACGCAAATGGAATAGTGTTAACTGCATTTTCACCATTGAGGAAAGGT
707

Qy        661 GCCAGCCGAGGAGCAAATGAGGTTATGGAGAATGATATGCTTAAACAGATTGCAGATGCT
720
              || ||| ||||| | ||||| ||||||||||||||||||||||| ||||||||||||||
Db        708 GCAAGCAGAGGACCTAATGAAGTTATGGAGAATGATATGCTTAAAGAGATTGCAGATGCT
767

Qy        721 CATGGAAAGTCTATTGCACAAATTTCTCTGAGATGGTTATATGAACAAGGAATCACTTTT
780
              |||||||||||| |||||||||| ||||| |||||| |||||||||||||| ||||||||
Db        768 CATGGAAAGTCTGTTGCACAAATATCTCTAAGATGGCTATATGAACAAGGAGTCACTTTT
827

Qy        781 GTTCCAAAGAGCTATGATAAGGAGAGAATGAGTCAAAATTTGAGAATCTTTGATTGGACA
840
              ||||| ||||| |||||||||||||||||||  |||||||| | |||||||||||| ||
Db        828 GTTCCCAAGAGTTATGATAAGGAGAGAATGAACCAAAATTTGTGTATCTTTGATTGGTCA
887

Qy        841 CTGACAAAGGAGGATCATGAGAAAATTGATCAAATTAAGCAGAATCGTTTGATCCCTGGA
900
               ||||||| || |||||||||||||| |||||||||||||| ||||||||||||||||||
Db        888 TTGACAAAAGAAGATCATGAGAAAATCGATCAAATTAAGCAAAATCGTTTGATCCCTGGA
947

Qy        901 CCAACCAAGCCAAGTCTCAATGATCTTTGGGATGATGAAATATA 944
              |||||||||||  | |||||||| || |  |||||  ||| | |
Db        948 CCAACCAAGCCTGGACTCAATGACCTCTATGATGACTAAAAAAA 991; and
```

and for chalcone isomerase see Jez J. *et al.* Nature Structural Biology, 2000; Vol. 7, No. 9, pp. 786-791 especially Figure 1.

Applicants' assertions that the prior art reference does not teach "a plant active in flavanol and anthocyanin biosynthesis" is incorrect. The reference teaches that 1-3 diphenylpropane flavonoid derivatives (i.e. flavonol and anthocyanin) are ubiquitous among plants species (col. 1 lines 17-28).

Applicant broadly claims transformed plants comprising unspecified fragments of unspecified length and identity of heterologous isoflavone synthase and chalcone reductase that retain activity; and transformed plants comprising unspecified fragments of unspecified length

and identity of heterologous isoflavone synthase, chalcone reductase and chalcone isomerase that retain activity; wherein the enzymes are encoded by polynucleotide sequences that hybridize to SEQ ID NO: 1, 3, and 5 under hybridization conditions of very low stringency.

U.S. Patent 7,038,113 teaches the production of daidzein in plants transformed with isoflavone synthase, chalcone reductase and chalcone isomerase (see claims and columns 6 line 32 to column 8 line 11; and especially column 14 lines 13 to 43) and that isoflavone synthase, chalcone reductase and chalcone isomerase encoding polynucleotides were known in the art; and thus the reference teaches all the limitations of claims 1-2, 22-25, 28-31 and 34-39.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RUSSELL KALLIS whose telephone number is (571)272-0798. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anne Marie Grunberg can be reached on (571) 272-0975. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Russell Kallis/
Primary Examiner, Art Unit 1638
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